A new *Dirphiopsis* from Bolivia, with larval comparisons of the genus (Lepidoptera: Saturniidae, Hemileucinae)

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Abstract: *Dirphiopsis* ***herbini*** **n. sp.** is described from south central Bolivia (holotype male in the Museum of Natural History of Los Angeles County). It is sympatric and synchronic with *Dirphiopsis schreiteri* (Schaus, 1925) and *Dirphiopsis cochabambensis* (Lemaire, 1977), and is distinguished by its overall blackness and reduced white markings. Male and female genitalia are figured and adults and first and last larval stages are described and illustrated in color and compared with close relatives. Larvae fed in the laboratory on *Malosma laurina* (Nutt. in T. & G.) Nutt. ex Abrams (= *Rhus laurina;* Anacardiaceae).

Una *Dirphiopsis* nueva de Bolivia (Lepidoptera: Saturniidae, Hemileucinae)

Resumen: Se describe *Dirphiopsis herbini* **n. sp.** del sureste de Bolivia. Es simpátrica y sincrónica con *Dirphiopsis schreiteri* (Schaus, 1925) y *Dirphiopsis cochabambensis* (Lemaire, 1977), y se distingue por su negritud general y manchas blancas reducidas. Se figuran los genitales de macho y hembra y se describe e ilustra en colores los adultos y las larvas del primero y del último estadios, comparándolos con parientes cercanos. En el laboratorio las larvas se alimentaron de *Malosma laurina* (Nutt. in T. & G.) Nutt. ex Abrams (= *Rhus laurina;* Anacardiaceae).

Eine neue *Dirphiopsis* von Bolivien (Lepidoptera: Saturniidae, Hemileucinae)

Zusammenfassung: Die neue Art *Dirphiopsis* ***herbini*** **n. sp.** aus dem Südosten von Bolivien wird beschrieben. Sie fliegt sympatrisch und synchron mit *Dirphiopsis schreiteri* (Schaus, 1925) und *Dirphiopsis cochabambensis* (Lemaire, 1977), von denen sie sich durch den schwärzeren Gesamteindruck und die reduzierte weiße Zeichnung unterscheidet. Männchen, Weibchen, männliche und weibliche Genitalien sowie erstes und letztes (= L_6) Larvenstadium werden beschrieben und abgebildet, letzteres im Vergleich mit einigen verwandten Arten. In der Gefangenschaft wurden die Raupen mit *Malosma laurina* (Nutt. in T. & G.) Nutt. ex Abrams (= *Rhus laurina;* Anacardiaceae) aufgezogen.

Introduction

Sixteen species of medium sized moths comprise the neotropical genus *Dirphiopsis* Bouvier, 1928 (Lemaire 2002). Most species are dark brown, reddish or black with more or less bold light markings and, most notably, a yellow or white irregular discocellular mark or group of marks and a conspicuous pink or white semicircular area at the base of the forewing. The abdomen is black with white lateral stigmata resembling "portholes" and is tipped dull orange.

Specimens of a distinct, mostly black undescribed species with reduced white spots were collected at lights in south central Bolivia, at medium elevation in humid forest. D. Herbin and M. Laguerre collected two ♀♀ in Tarija Department in 1997 among many specimens of *Dirphiopsis schreiteri* (Schaus, 1925). C. A. Conlan and I collected one ♂ and one ♀ in Chuquisaca Department in 1999, flying with both *D. schreiteri* and *Dirphiopsis cochabambensis* (Lemaire, 1977). Eggs were obtained from this ♀ and reared in the laboratory. I photographed most of the stages in color and compare the last instar larva with that of Bolivian species *Dirphiopsis janzeni* Lemaire, 2002 and *D. schreiteri*, it's two closest relatives, and with *D. cochabambensis* and *Dirphiopsis wolfei* Lemaire, 1992, the latter from Mexico and Guatemala.

Dirphiopsis herbini n. sp.

Holotype: ♂, Bolivia, Chuquisaca Dept., 10 km E of Monteagudo, el. 1400 m, 19°47.95 S, 063°53.92 W, 5.–6. xi. 1999; at MV & UV lights, leg. K. Wolfe & C. A. Conlan.

Paratypes (9 ♂♂, 10 ♀♀, all Bolivia): allotype ♀: data as holotype, ab ovo; 2 ♀♀, Tarija Department, Villa Montes to Tarija, km 155, 1600 m, 8. ii. 1997, leg. D. Herbin & M. Laguerre. 1 ♂, data as holotype; 8 ♂♂, 7 ♀♀, same data as allotype ♀.

Type deposition: The holotype and allotype pair will be placed in the Museum of Natural History of Los Angeles County; paratypes will be placed in the Muséum national d'Histoire naturelle, Paris, the Lepidoptera collection of the Research Institute and Museum Senckenberg, Frankfurt am Main, Germany, the Museo Noel Kempff Mercado, Santa Cruz, Bolivia, and in the collections of C. A. Conlan, Daniel Herbin and the author.

Etymology: This species is named in honor of Daniel Herbin, avid field collector and expert student of the Saturniidae, longtime friend and colleague.

Description and diagnosis

Diagnosis: Most *Dirphiopsis* species are strongly marked reddish brown, but the new species most closely resembles the nearly black and white *D. janzeni* and *D. schreiteri*, from which it can be distinguished by is overall darker color, unicolorous blackish hindwing and much reduced white area at base of forewing.

Description ♂ (Figs. 1, 2): wingspan 52–57 mm; forewing length 26–27 mm. Antennae dusky yellow, bipectinate. Head dark gray, labial palpi maroon; thorax black with long, course yellow hairs, band on metathorax maroon; legs gray and maroon, tarsi maroon with white inner side; abdomen dorsally black, ventrally dull pink gray, with a distal tuft of orange, laterally with triple rows of round, white stigmata. Forewing moderately long, apex not produced, outer margin slightly convex, tornus rounded. Forewing dark brownish black; antemedial line very close

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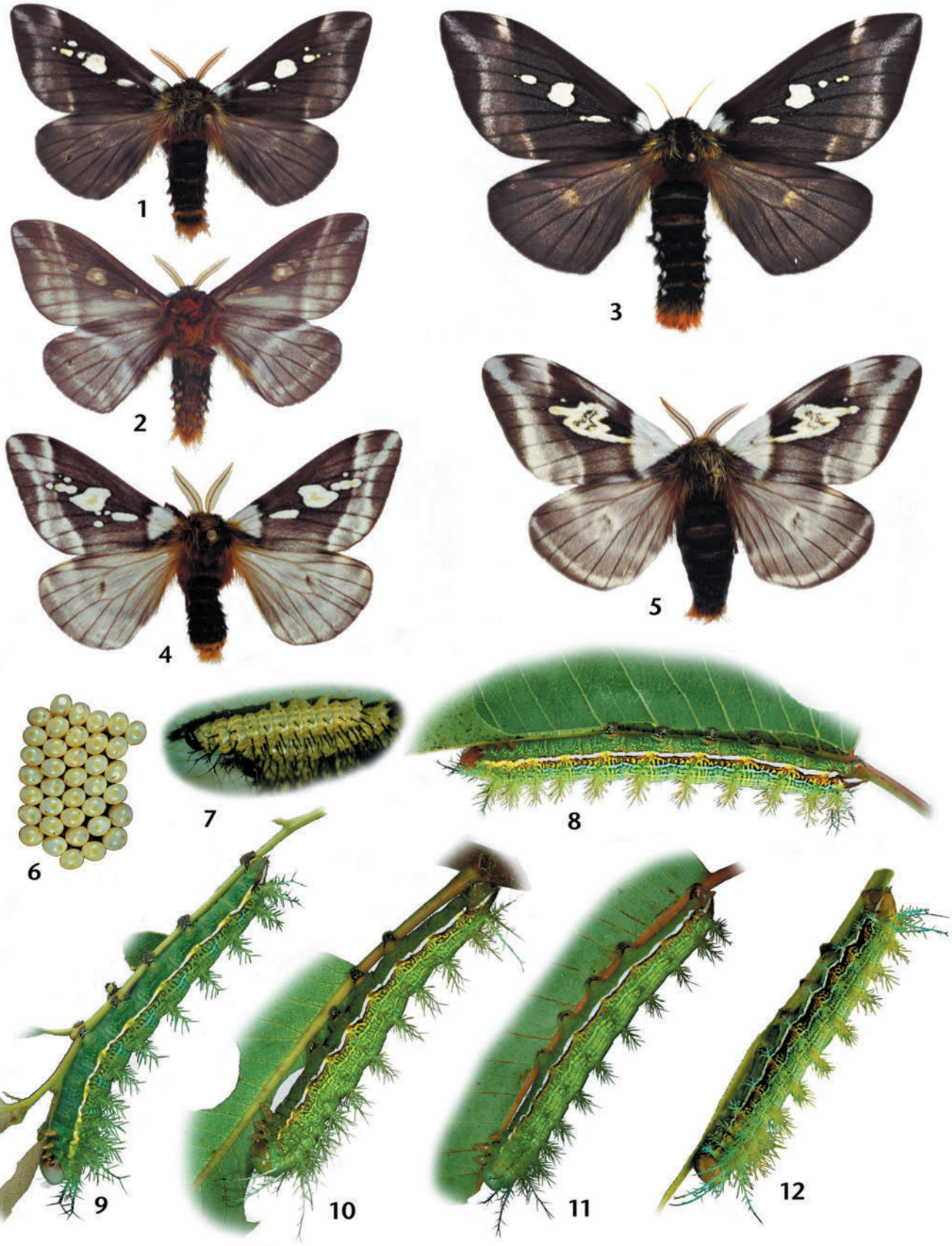

Color plate, Figs. 1–12: Comparison of *Dirphiopsis* species. **Fig. 1:** *D. herbini*, ♂. **Fig. 2:** *D. herbini*, ♂, underside. **Fig. 3:** *D. herbini*, ♀. **Fig. 4:** *D. janzeni*, ♂. **Fig. 5:** *D. schreiteri*, ♂. **Fig. 6:** *D. herbini*, eggs. **Fig. 7:** *D. herbini*, first instar larvae. **Fig. 8:** *D. herbini*, 6th (last) instar larva. **Fig. 9:** *D. janzeni*, 6th instar larva. **Fig. 10:** *D. schreiteri*, 6th instar larva. **Fig. 11:** *D. cochabambensis*, 6th instar larva. **Fig. 12:** *D. wolfei*, 6th instar larva. — Photographs and digital processing K. Wolfe.

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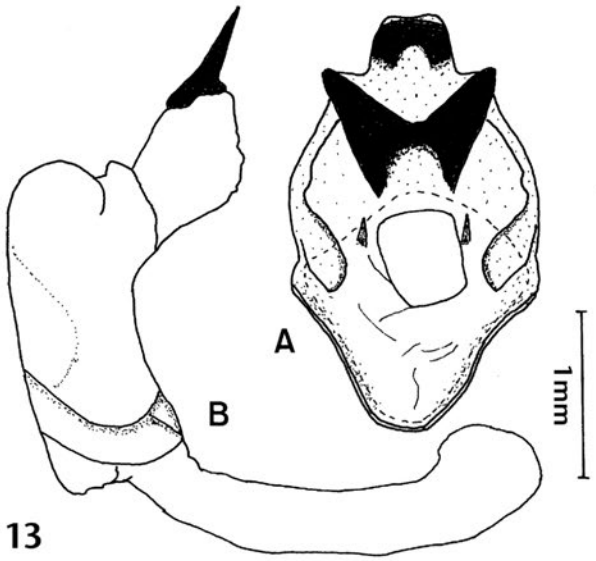

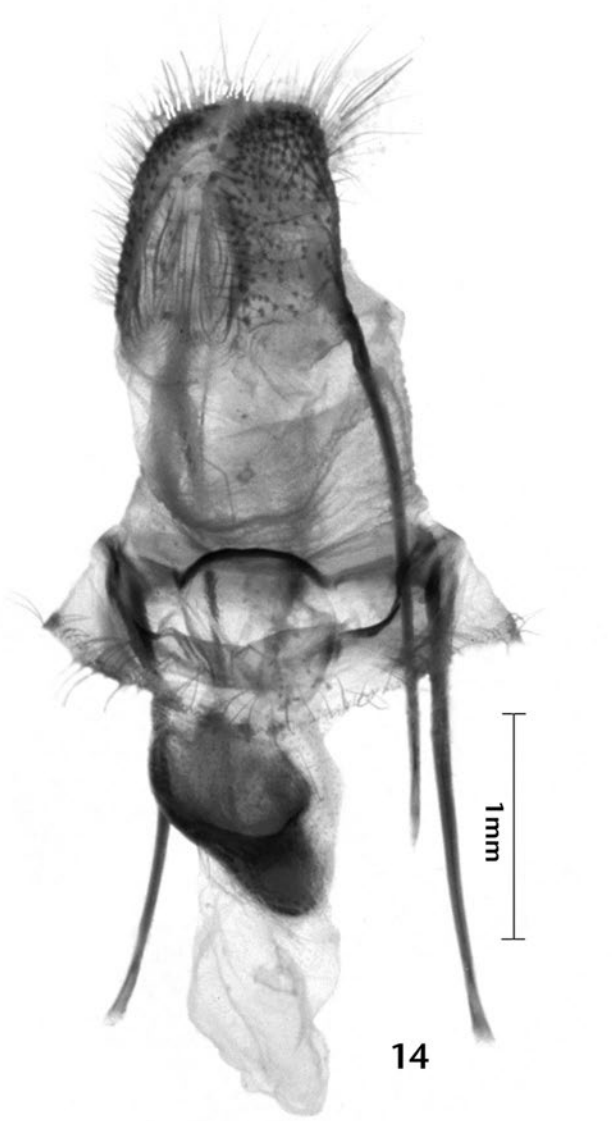

Fig. 13: *D. herbini*. **A.** ♂ genitalia, aedeagus removed. **B.** aedeagus.
Fig. 14: *D. herbini*, ♀ genitalia.

to base with white semicircular spot at base; postmedial indistinct, submarginal band sinuous shaded brownish gray and white, deeply concave marginal band dark as most of forewing; intense white spots include somewhat rounded discocellular spot, an inner small white bar and an irregular number of smaller white dots distally to these. Hindwing slightly paler than forewing, with indistinct dull yellow discal spot and indistinct darker postmedian with lighter submarginal band and a small white subapical spot on costa; anal edge of hindwing with longer orange-brown scales. Underside gray with pale buff yellow discal spots on forewing, hindwing without discal spot; inner margin of forewing dull white, ante- and postmedials of hindwing white, markings otherwise similar to dorsal surface.

♀ (Fig. 3): wingspan 69–71 mm; forewing length 36 mm. Antennae dusky yellow, filiform. Head, body, wings, dorsal forewing basal white patch and discocellular constellation of white spots as in male; all other white or light markings subdued, less contrasting.

♂ genitalia (Fig. 13): Typical for *Dirphiopsis;* valves rudimentary, projecting forward instead of caudally, gnathos large and butterflied, transtilla represented by two dark small projections, uncus rectangular. Aedeagus massive, with long slender bulbus ejaculatorius, vesica large and crooked, tipped with long beak-like cornutus. Gnathos, cornutus and most of uncus heavily sclerotized.

♀ genitalia (Fig. 14): Caudal narrow edge of postvaginal plate and anterior half of ductus bursae sclerotized.

Distribution: All known specimens were found within about 200 km of each other at 1400–1600 m elevation, in habitat of mixed forest and secondary growth.

Flight period: Specimens were collected during the rainy season, in November and February. Reared ♂♂ became very active and nervous one hour before dark, and flew at dusk, which may explain the preponderance of ♀♀ collected. The single wild-collected ♂ was one of the first moths to the light.

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Immature stages

Eggs were gathered from a wild captured female. Larvae eclosed in 28 days and readily fed on *Malosma laurina* (Nutt. *in* T. & G.) Nutt. *ex* Abrams (= *Rhus laurina,* Anacardiaceae). Wild hostplant is not known. Rearing was in plastic boxes with screened lids, branches of foodplant were based in water and changed every 48 hours. Head capsules were collected to determine instars. Larvae completed 6 instars in 7 weeks and pupated in a loose "cocoon" of sparse silk and debris on bottom of container. Unfortunately, I was not present to observe and record all larval stages.

Egg (Fig. 6): Pale yellow upright oval, 1.3 mm long × 1.1 mm wide × 0.9 mm thick, deposited in dense groups of up to 50 or more eggs, with dark yellow micropyle on top.

Larva: First instar (Fig. 7): Head 0.7 mm wide, shiny black. Body: 2.3 mm max. length; pale green with 4 pale yellow stripes on each side; scoli and spines shiny black; thoracic legs black, abdominal prolegs pale green, paranal lobes pale green and yellow with black markings.

Sixth instar (Fig. 8): Head 4.9 mm wide, light brown. Body: 70 mm max. length; grass green, darker ventrally with yellowish white filigree, lighter dorsally with yellow and white reticulations; broad spiracular band yellow with dark reddish brown filigree, bordered ventrally by bold white subspiracular line and dorsally with narrow white lateral line followed by supralateral and subdorsal white lines; spiracles orange; scoli pale green with branching spines yellow orange; thoracic legs light brown, base of prolegs shiny black with white dots; paranal lobes light brown, green on anterior edge, anal plate dark brown edged white.

Observations

The wild caught ♂ of *D. herbini* was slightly smaller than all reared ♂ specimens but was identical in color and tone.

Among five species of *Dirphiopsis* I reared, larvae were remarkably similar (unpubl. notes). Most outstanding difference was head color. Sympatric and synchronic with the new species, last instar larvae of *D. herbini* (tan head), *D. schreiteri* (Fig. 10) (green head) and *D. cochabambensis* (Fig. 11) (green head) differ slightly. Larvae of *D. janzeni*, from more arid but contiguous habitat in Bolivia, possess pale green heads, while the larva of *D. wolfei* (Fig. 12) (tan head), geographically more isolated in Mexico and Guatemala, is the most distinct overall, with darker and broader red spiracular band and more pale blue on scoli and spines.

Acknowledgments

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